

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON

HYBRID AUDIO, LLC,

Plaintiff,

v.

NINTENDO OF AMERICA INC. and
NINTENDO CO., LTD.,

Defendants.

Civil Action No.

**COMPLAINT
for Patent Infringement**

JURY TRIAL DEMANDED

Plaintiff Hybrid Audio, LLC (“Hybrid Audio” or “Plaintiff”), for its Complaint against Nintendo of America Inc. (“Nintendo USA”) and Nintendo Co., Ltd. (“Nintendo Japan”) (collectively referred herein as “Defendants”) alleges the following:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*

THE PARTIES

2. Plaintiff Hybrid Audio LLC is a limited liability corporation organized and existing under the laws of Virginia, with its principal place of business at 4041 University Drive, Suite 102, Fairfax, Virginia 22030.

3. Upon information and belief, Nintendo USA is a corporation organized and existing under the laws of the State of Washington with its principal place of business at 4600 150th Ave. NE, Redmond, WA 98052 and a registered agent for service of process at CT Corporation System, 711 Capitol Way S, Suite 204, Olympia, WA 98501.

1 10. On February 25, 1997, Aware, Inc. (“Aware”) filed an application for patent, Serial
2 No 08/804,909 (‘909 application”), entitled Signal Processing Utilizing a Tree-Structured Array, in
3 the United States Patent and Trademark Office (“USPTO”). Aware is a corporation existing under
4 the laws of Massachusetts, with an principal place of business at 40 Middlesex Turnpike, Bedford,
5 Massachusetts 01730. The ‘909 application claimed priority to an original application filed on
6 September 12, 1992. Following prosecution, the pending claims of the ‘909 application were
7 allowed by the USPTO. On June 26, 2001, U.S. Patent No. 6,252,909 (the “‘909 patent”) was duly
8 and legally issued by USPTO. A copy of the ‘909 patent is attached as Exhibit 1.

9 11. On November 23, 2004, a reissue application was filed for the ‘909 patent. On April
10 29, 2008, the ‘909 patent reissued with certificate number RE40,281. A copy of that Certificate is
11 attached as Exhibit 2.

12 12. By assignment dated December 22, 2010, Aware assigned all right, title and interest
13 in the RE40,281 and ‘909 patent to Hybrid Audio LLC (“Hybrid Audio-Texas”).

14 13. On January 5, 2011, counsel for Hybrid Audio-Texas sent each Defendant a letter
15 providing notice that Hybrid Audio-Texas believed that certain of Defendants’ products infringed
16 claims of the RE40,281 patent.

17 14. In April, 2011, Hybrid Audio-Texas filed a patent infringement lawsuit against other
18 parties, asserting infringement of the RE40,281 patent. (*Hybrid Audio LLC v. High Tech Computer*
19 *Corp., et. al* Case No. 6:11-cv-00195 (E.D. Tex. 2011).) In that case, Hybrid Audio-Texas alleged
20 that certain elements of so-called “MP3” technology infringed the RE40,281 patent. That prior
21 litigation was subsequently resolved against each of those parties.

22 15. During the pendency of that prior litigation, on June 18, 2012, a request for
23 reexamination of the RE40,281 patent was filed in the USPTO. That request was assigned
24 Reexamination Request No. 90/012,364. That reexamination proceeded, with the result that every

1 reexamined claim was confirmed. On December 1, 2015, the RE40,281 patent received
2 Reexamination Certificate No. RE40,281 C1, confirming patentability of all of the reexamined
3 claims. A copy of that Reexamination Certificate is attached as Exhibit 3. For convenience, the
4 reexamined C1 patent, including the original '909 patent document and the first RE40,281 patent,
5 are collectively referred to in this Complaint as the "RE281C patent."

6 16. The RE281C patent expired on September 21, 2012, twenty years after the priority
7 filing date of the original parent application. However, Hybrid Audio-Texas was constrained from
8 seeking royalties or filing lawsuits during the pendency of the most recent reexamination, from
9 June, 2012 through December, 2015. At the same time, the entire period from Defendants' notice
10 of the RE281C patent (at that time, the RE40,218 patent) through the patent expiration is within the
11 statutory six year limitation on past damages under 35. U.S.C. § 286.

12 17. By assignment dated March 28, 2016, Hybrid Audio-Texas assigned all right, title
13 and interest in the RE281C patent to Hybrid Audio.

14 18. Accordingly, in the present case, Hybrid Audio is seeking royalties, as set forth
15 below, from the date on which Defendants received notice of their infringement of the RE281C
16 patent, January 5, 2011, to the expiration of the RE281C patent, September 21, 2012.

17 19. The RE281C patent is related to certain signal processing technology. As set forth
18 above, it was previously asserted against certain MP3 technologies.

19 20. MPEG, a working group formally named as ISO/IEC JTC1/SC29/WG11, was
20 established by the ISO/IEC standardization body in 1988 to develop generic (i.e. useful for different
21 applications) standards for the coded representation of moving pictures, associated audio and their
22 combination. Since then, MPEG has undertaken the standardization of compression techniques for
23 video and audio. Originally, its main goal was video coding together with audio coding for digital
24

1 storage media. In the meantime, the MPEG audio coding standard found its way into many
2 different applications.

3 21. On information and belief, certain technology included in what is generally known as
4 “MP3” is set forth in technical standards designated “ISO/IEC 11172-3:1993,” (“ISO/IEC 11172-3”) and “HE-AACv2-ISO/IEC 14496-3:2009(E)” (“ISO/IEC 14496-3:2009(E)”) (these relevant
5 standards are collectively referred to herein as the “MP3 Standards”). Due in large part to the
6 popularity of delivering music through the Internet and other electronic forms of distribution, use of
7 audio files consistent with the MP3 Standards has become widespread.

8
9 22. Pursuant to relevant policies governing the standards organization, Aware disclosed to
10 the ISO/IEC working group that it might have intellectual property related to one or more of the
11 MP3 Standards. Accordingly, for example, Aware is identified on the “List of patent holders” set
12 forth as Annex H to the ISO/IEC 11172-3 Standard. That Annex H is attached as Exhibit 4.

13 23. Aware agreed, and Hybrid Audio also agrees, to license users of MP3 technology on
14 reasonable, and non-discriminatory (RAND) terms. Hybrid Audio intends to abide by such terms
15 by furnishing a courtesy copy of this Complaint upon filing, in advance of service, so that the
16 Parties may amicably agree to such a RAND royalty. If any of the Defendants contests the
17 obligation to abide by such terms, through action or inaction, then Plaintiff shall proceed against
18 any such Defendant as an unwilling licensee and pursue the highest damages and/or other relief
19 available under the law.

20 24. On information and belief, certain of Defendants’ products and services made, used,
21 offered for sale, sold, or imported during the applicable period for which Hybrid Audio seeks
22 royalties practice the MP3 Standards sing hardware and software that is not provided by Microsoft
23 Corporation. These products and services incorporated inventions described and claimed in the
24

1 RE281C patent. These products and services include, but are not limited to, the Nintendo Wii and
2 Nintendo DS products.

3 25. On information and belief, each of these products, as well as other of Defendants'
4 products, practice the MP3 Standards sing hardware and software that is not provided by Microsoft
5 Corporation. All such products made, used, offered for sale, sold, or imported between January 5,
6 2011 and September 21, 2012 are collectively referred to herein as the "Infringing
7 Instrumentalities."

8 **COUNT I – INFRINGEMENT OF U.S. PATENT NO. RE40,281**

9 26. The allegations set forth in the foregoing paragraphs 1 through 25 are incorporated
10 into this First Claim for Relief.

11 27. The inventions of the RE281C patent resolve technical problems related to the use of
12 signal processing technology. For example, the inventions allow parties to provide an improved
13 communication system for sending a sequence of signals on a communications link. Specifically,
14 the communication signals may be arranged to approximate the bands of the human auditory system
15 for audio signal processing applications.

16 28. The claims of the RE281C patent recite one or more inventive concepts that are
17 rooted in signal processing technology, and overcome problems specifically arising in the realm of
18 signal processing technology.

19 29. The claims of the RE281C patent recite an invention that is not merely the routine or
20 conventional use of signal processing technology. Instead, to optimize transmission quality audio
21 applications, signal processing is performed, for example, to approximate the bands of the human
22 auditory system for audio signal processing applications. According to one aspect of the invention,
23 this may be achieved through the utilization of specifically recited sets of filter banks, which
24 interact in specifically recited manners.

1 30. The technology claimed in the RE281C patent does not preempt all ways of
2 electronically transmitting information, nor preempt the use of all signal processing technology, nor
3 preempt any other well-known or prior art technology.

4 31. Accordingly, each claim of the RE281C patent recites a combination of elements
5 sufficient to ensure that the claim in practice amounts to significantly more than a patent on an
6 ineligible concept.

7 32. Hybrid Audio is the assignee and owner of the right, title and interest in and to the
8 RE281C patent, including the right to assert all causes of action arising under said patents and the
9 right to any remedies for infringement of them, including remedies for past infringements.

10 33. Upon information and belief, each Defendant has and continues to directly infringe
11 at least claims 5-6, 9-13, 15-22, 24-30, 32-35, 38-42, 45-49, 50-51, 53, 55-61, 63, 65-121 of the
12 RE281C patent by making, using, selling, importing and/or providing and causing to be used the
13 Infringing Instrumentalities.

14 34. The Infringing Instrumentalities infringe claim 5 of the RE281C patent. Claim 5
15 generally recites a signal processing method that includes splitting a signal into subbands using
16 multiple filter banks that form a tree-structured array having a root node and greater than two leaf
17 nodes. Each of the nodes includes a filter bank having greater than two filters, and at least one of
18 the leaf nodes includes a number of filters that differs from the number of filters in another leaf
19 node.

20 35. The Infringing Instrumentalities infringe claim 5 of the RE281C patent. (*See, e.g.,*
21 ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC 11172-3, §
22 2.1 Definitions, p.5; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66; ISO/IEC 11172-3, § 2.4.3.4
23 Layer III, p.33; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.95; ISO/IEC
24 11172-3, § C.1.3 Analysis subband filter, p.67; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the

hybrid filterbank, p.96; ISO/IEC 11172-3, § 2.4.2.7 Audio data, Layer III, p.26; ISO/IEC 11172-3, § 2.4.2.7 Audio data, Layer III, p.27; ISO/IEC 14496-3:2009(E), Introduction; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks, p.238; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E), § 8.6.4 Parametric stereo, p.42.)

36. The Infringing Instrumentalities infringe claim 6 of the RE281C patent. Claim 6 generally recites the method of claim 5, wherein at least one of the filter banks is designed to utilize cosine modulation.

37. The Infringing Instrumentalities infringe claim 6 of the RE281C patent. (*See, e.g.*, ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67.)

38. The Infringing Instrumentalities infringe claim 9 of the RE281C patent. Claim 9 generally recites the method of claim 5, wherein the signal is an audio signal.

39. The Infringing Instrumentalities infringe claim 9 of the RE281C. (*See, e.g.*, ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E), § 8.1 Scope, p.2; ISO/IEC 14496-3:2009(E), § 8.A.1 Overview, p.65; ISO/IEC 14496-3:2009(E), § 8.1 Scope, p.2.)

40. The Infringing Instrumentalities infringe claim 10 of the RE281C patent. Claim 10 generally recites the method of claim 5, wherein at least one of the filter banks is designed to utilize polyphase components.

41. The Infringing Instrumentalities infringe claim 10 of the RE281C patent. (*See, e.g.*, ISO/IEC 14496-3:2009(E), § 4.B.18.2 Analysis filterbank, p.106; ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks, p.240.)

1 42. The Infringing Instrumentalities infringe claim 11 of the RE281C patent. Claim 11
2 generally recites the method of claim 10, wherein the polyphase components are generated using a
3 window comprising 512 samples.

4 43. The Infringing Instrumentalities infringe claim 11 of the RE281C patent. (*See, e.g.*,
5 ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67; ISO/IEC 11172-3, Table C.1, p.68-
6 69; ISO/IEC 11172-3, Figure C.4, p.78.)

7 44. The Infringing Instrumentalities infringe claim 12 of the RE281C patent. Claim 12
8 generally recites a signal processing method that includes splitting a signal into subbands using
9 multiple filter banks connected in a tree-structured array having first and second levels. The first
10 level includes a filter bank having more than two filters. The second level includes at least two
11 second level filter banks, each of which has as its input an output from a different filter in the first
12 level. One of the second level filter banks has a different number of filters than another second level
13 filter bank.

14 45. The Infringing Instrumentalities infringe claim 12 of the RE281C patent. (*See, e.g.*,
15 ISO/IEC 11172-3, § 2.1 Definitions, p.5.; *see also, e.g.*, ISO/IEC 11172-3, § C.1.1.1. _Introduction,
16 p.66; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks, p.238; ISO/IEC 14496-3:2009(E), §
17 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E), § 8.A.3 Decoding process, p.65-66.)

18 46. The Infringing Instrumentalities infringe claim 13 of the RE281C patent. Claim 13
19 generally recites the method of claim 12, wherein at least one of the filter banks is designed to
20 utilize cosine modulation.

21 47. The Infringing Instrumentalities infringe claim 13 of the RE281C patent. (*See, e.g.*,
22 ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, §
23 C.1.3 Analysis subband filter, p.67.)

1 48. The Infringing Instrumentalities infringe claim 15 of the RE281C patent. Claim 15
2 generally recites the method of claim 12, wherein the signal is an audio signal.

3 49. The Infringing Instrumentalities infringe claim 15 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66; ISO/IEC
5 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246.)

6 50. The Infringing Instrumentalities infringe claim 16 of the RE281C patent. Claim 16
7 generally recites the method of claim 12, wherein at least one of the filter banks is designed to
8 generate polyphase components.

9 51. The Infringing Instrumentalities infringe claim 16 of the RE281C patent. (*See, e.g.*,
10 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
11 p.240.)

12 52. The Infringing Instrumentalities infringe claim 17 of the RE281C patent. Claim 17
13 generally recites the method of claim 16, wherein the polyphase components are generated using a
14 window comprising 512 samples.

15 53. The Infringing Instrumentalities infringe claim 17 of the RE281C patent. (*See, e.g.*,
16 ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67.)

17 54. The Infringing Instrumentalities infringe claim 18 of the RE281C patent. Claim 18
18 generally recites a signal processing method, comprising synthesizing a signal using a plurality of
19 synthesis filter banks connected to form a tree structured array having greater than two leaf nodes
20 and a root node, wherein each of the nodes comprises one synthesis filter bank having greater than
21 two filters, with at least one of the leaf nodes having a number of filters that differs from the
22 number of filters in a second leaf node.

23 55. The Infringing Instrumentalities infringe claim 18 of the RE281C patent. (*See,*
24 *e.g.*, ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 2.1 Definitions, p.9; *see*

1 also e.g., ISO/IEC 11172-3, § 2.4.3.4 Layer III, p.33; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of
2 the hybrid filterbank, p.95; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36; *see also*
3 e.g., ISO/IEC 11172-3, § 2.4.3.4.10.2 IMDCT, p.36; ISO/IEC 11172-3, § 2.4.3.4.10.3 Windowing,
4 p.37.)

5 56. The Infringing Instrumentalities infringe claim 19 of the RE281C patent. Claim 19
6 generally recites the method of claim 18, wherein at least one of the synthesis filter banks is
7 designed to utilize polyphase components.

8 57. The Infringing Instrumentalities infringe claim 19 of the RE281C patent. (*See, e.g.,*
9 ISO/IEC 11172-3, § 2.1 Definitions, p.8.)

10 58. The Infringing Instrumentalities infringe claim 20 of the RE281C patent. Claim 20
11 generally recites the method of claim 19, wherein the polyphase components are generated using a
12 window length of 512 samples.

13 59. The Infringing Instrumentalities infringe claim 20 of the RE281C patent. (*See, e.g.,*
14 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Table B.3, p.50-
15 52; ISO/IEC 11172-3, Figure A.2, p.39.)

16 60. The Infringing Instrumentalities infringe claim 21 of the RE281C patent. Claim 21
17 generally recites the method of claim 18, wherein at least one of the synthesis filter banks is
18 designed to transform frequency components into polyphase components by cosine modulating the
19 frequency components.

20 61. The Infringing Instrumentalities infringe claim 21 of the RE281C patent. (*See, e.g.,*
21 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
22 p.41.)

62. The Infringing Instrumentalities infringe claim 22 of the RE281C patent. Claim 22 generally recites the method of claim 18, wherein the signal is a regenerated time-domain audio signal.

63. The Infringing Instrumentalities infringe claim 22 of the RE281C patent. (*See, e.g.*, ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

64. The Infringing Instrumentalities infringe claim 24 of the RE281C patent. Claim 24 generally recites the method of claim 18, wherein the tree-structured array is designed to synthesize a decompressed audio signal.

65. The Infringing Instrumentalities infringe claim 24 of the RE281C patent. (*See, e.g.*, ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

66. The Infringing Instrumentalities infringe claim 25 of the RE281C patent. Claim 25 generally recites the method of claim 18, wherein at least one of the synthesis filter banks is designed to transform sub-band components into polyphase components by cosine modulating the sub-band components.

67. The Infringing Instrumentalities infringe claim 25 of the RE281C patent. (*See, e.g.*, ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

68. The Infringing Instrumentalities infringe claim 26 of the RE281C patent. Claim 26 of the RE281C patent generally recites a signal processing method comprising synthesizing a signal using a plurality of synthesis filter banks connected in a tree-structured array having a first and a second level, wherein the first level comprises more than two first level synthesis filter banks, and one first level synthesis filter bank has a different number of filters than another first level synthesis filter bank, and the second level comprises one synthesis filter bank having more than two filters, the second level having as inputs the outputs of the first level synthesis filter banks.

1 69. The Infringing Instrumentalities infringe claim 26 of the RE281C patent. (*See, e.g.,*
2 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 0.2 Layers, p.vi; *see also*
3 *e.g.,* ISO/IEC 11172-3, Fig. A.4 Annex A, p.41; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the
4 hybrid filterbank, p.95; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36; ISO/IEC 11172-3,
5 Fig. A.4 Annex A, p.41; *see also e.g.,* ISO/IEC 11172-3, § 2.4.3.4.10.2 IMDCT, p.36; ISO/IEC
6 11172-3, § 2.4.2.7 Audio data, Layer III, p.26.)

7 70. The Infringing Instrumentalities infringe claim 27 of the RE281C patent. Claim 27
8 generally recites the method of claim 26, wherein at least one of the synthesis filter banks is
9 designed to utilize polyphase components.

10 71. The Infringing Instrumentalities infringe claim 27 of the RE281C patent. (*See, e.g.,*
11 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, § 2.1 Definitions, p.9; ISO/IEC 11172-
12 3, Fig. A.4 Annex A, p.41.)

13 72. The Infringing Instrumentalities infringe claim 28 of the RE281C patent. Claim 28
14 generally recites the method of claim 27, wherein the polyphase components are generated using a
15 window length of 512 samples.

16 73. The Infringing Instrumentalities infringe claim 28 of the RE281C patent. (*See,*
17 *e.g.,* ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; *See also e.g.,* ISO/IEC 11172-3,
18 Figure A.2, p.39.)

19 74. The Infringing Instrumentalities infringe claim 29 of the RE281C patent. Claim 29
20 generally recites the method of claim 26, wherein the polyphase components are generated using a
21 window length of 512 samples.

22 75. The Infringing Instrumentalities infringe claim 29 of the RE281C patent. (*See, e.g.,*
23 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
24 p.41.)

1 76. The Infringing Instrumentalities infringe claim 30 of the RE281C patent. Claim 30
2 generally recites the method of claim 26, wherein the signal is a reconstructed audio signal.

3 77. The Infringing Instrumentalities infringe claim 30 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

5 78. The Infringing Instrumentalities infringe claim 32 of the RE281C patent. Claim 32 of
6 the RE281C patent generally recites the method of claim 26, wherein the tree-structured array is
7 designed to synthesize a decompressed audio signal.

8 79. The Infringing Instrumentalities infringe claim 32 of the RE281C patent. (*See, e.g.*,
9 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

10 80. The Infringing Instrumentalities infringe claim 33 of the RE281C patent. Claim 33
11 generally recites the method of claim 26 wherein at least one of the synthesis filter banks is
12 designed to transform sub-bandcomponents into polyphase components by cosine modulating the
13 sub-band components.

14 81. The Infringing Instrumentalities infringe claim 33 of the RE281C patent. (*See, e.g.*,
15 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
16 p.41.)

17 82. The Infringing Instrumentalities infringe claim 34 of the RE281C patent. Claim 34
18 generally recites a signal processing system that includes multiple filter banks that can connect to
19 form a tree-structured array to split a signal into subbands, the tree-structured array having a root
20 node and more than two leaf nodes. Each of the nodes includes one filter bank having more than
21 two filters, and at least one of the leaf nodes has a different number of filters than another of the leaf
22 nodes.

1 91. The Infringing Instrumentalities infringe claim 40 of the RE281C patent. (*See, e.g.,*
2 ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67; ISO/IEC 11172-3, Table C.1, p.68-69.)

3 92. The Infringing Instrumentalities infringe claim 41 of the RE281C patent. Claim 41
4 generally recites a signal processing system that includes multiple filter banks that can connect
5 to form a tree-structured array to split a signal into subbands, the tree-structured array having first
6 and second levels. The first level of the array includes one first level filter bank having more than
7 two filters; and the second level of the filter bank includes at least two second level filter banks.
8 Each second level filter bank has as its input an output from a different filter in the first level, and
9 one second level filter bank has a different number of filters than another second level filter bank.

10 93. The Infringing Instrumentalities infringe claim 41 of the RE281C patent. (*See, e.g.,*
11 ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66; ISO/IEC 11172-3, § 2.4.3.4 Layer III, p.33;
12 ISO/IEC 14496-3:2009(E), Introduction; ISO/IEC 14496-3:2009(E), § 8.6.4 Parametric stereo,
13 p.42; ISO/IEC 14496-3:2009(E), § 8.C.6.2 Parameter Estimation, p.106; ISO/IEC 14496-3:*see also*
14 *e.g.,* 2009(E), § 8.6.4.3 Low frequency filtering, p.44.)

15 94. The Infringing Instrumentalities infringe claim 42 of the RE281C patent. Claim 42
16 of the RE281C patent generally recites the system of claim 41, wherein at least one of the filter
17 banks is designed to utilize cosine modulation.

18 95. The Infringing Instrumentalities infringe claim 42 of the RE281C patent. (*See, e.g.,*
19 ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, §
20 C.1.3 Analysis subband filter, p.67.)

21 96. The Infringing Instrumentalities infringe claim 45 of the RE281C patent. Claim 45
22 generally recites the system of claim 41, wherein the signal is an audio signal.

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1 97. The Infringing Instrumentalities infringe claim 45 of the RE281C patent. (*See, e.g.*,
2 ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66; ISO/IEC
3 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246.)

4 98. The Infringing Instrumentalities infringe claim 46 of the RE281C patent. Claim 46
5 generally recites the system of claim 41, wherein at least one of the filter banks is designed to
6 generate polyphase components.

7 99. The Infringing Instrumentalities infringe claim 46 of the RE281C patent. (*See, e.g.*,
8 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
9 p.240.)

10 100. The Infringing Instrumentalities infringe claim 47 of the RE281C patent. Claim 47
11 generally recites the system of claim 46, wherein the polyphase components are generated using a
12 window comprising 512 samples.

13 101. The Infringing Instrumentalities infringe claim 47 of the RE281C patent. (*See, e.g.*,
14 ISO/IEC 11172-3, Table C.1, p.68-69.)

15 102. The Infringing Instrumentalities infringe claim 48 of the RE281C patent. Claim 48
16 generally recites a signal processing system comprising a plurality of synthesis filter banks that can
17 connect to form a tree-structured array to synthesize a signal, the tree-structured array having
18 greater than two leaf nodes and a root node, wherein each of the nodes comprises one synthesis
19 filter bank having greater than two filters, with at least one of the leaf nodes having a number of
20 filters that differs from the number of filters in a second leaf node.

21 103. The Infringing Instrumentalities infringe claim 48 of the RE281C patent. (*See, e.g.*,
22 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank,
23 p.36; *see also e.g.*, ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.95.)
24

1 104. The Infringing Instrumentalities infringe claim 49 of the RE281C patent. Claim 49
2 generally recites the system of claim 48, wherein at least one of the synthesis filter banks is
3 designed to generate polyphase components.

4 105. The Infringing Instrumentalities infringe claim 49 of the RE281C patent. (*See*,
5 *e.g.*, ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, § 2.1 Definitions, p.9; *See also*
6 *e.g.*, ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

7 106. The Infringing Instrumentalities infringe claim 50 of the RE281C patent. Claim 50
8 generally recites the system of claim 48, wherein at least one of the synthesis filter banks is
9 designed to transform frequency components into polyphase components by cosine modulating the
10 frequency components.

11 107. The Infringing Instrumentalities infringe claim 50 of the RE281C patent. (*See*,
12 *e.g.*, ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4
13 Annex A, p.41.)

14 108. The Infringing Instrumentalities infringe claim 51 of the RE281C patent. Claim 51
15 generally recites the system of claim 48, wherein the signal is a decompressed audio signal.

16 109. The Infringing Instrumentalities infringe claim 51 of the RE281C patent. (*See*,
17 *e.g.*, ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

18 110. The Infringing Instrumentalities infringe claim 53 of the RE281C patent. Claim 53
19 generally recites the system of claim 48, is designed to synthesized decompressed audio signal.

20 111. The Infringing Instrumentalities infringe claim 53 of the RE281C patent. (*See*,
21 *e.g.*, ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

22 112. The Infringing Instrumentalities infringe claim 55 of the RE281C patent. Claim 55
23 generally recites the system of claim 48, wherein at least one of the synthesis filter banks is
24

1 designed to transform sub-band components into polyphase components by cosine modulating the
2 sub-band components.

3 113. The Infringing Instrumentalities infringe claim 55 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
5 p.41.)

6 114. The Infringing Instrumentalities infringe claim 56 of the RE281C patent. Claim 56
7 generally recites the system of claim 55, wherein the polyphase components are generated using a
8 window length of 512 samples.

9 115. The Infringing Instrumentalities infringe claim 56 of the RE281C patent. (*See*,
10 *e.g.*, ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Table B.3,
11 p.50-52.)

12 116. The Infringing Instrumentalities infringe claim 57 of the RE281C patent. Claim 57
13 generally recites a signal processing system comprising plurality of synthesis filter banks designed
14 that can connect to form a tree-structured array to synthesize a signal, the tree-structured array
15 having a first and a second level, wherein the first level comprises more than two first level
16 synthesis filter banks, and one first level synthesis filter bank has a different number of filters than
17 another first level synthesis filter bank, and the second level comprises one synthesis filter bank
18 having more than two filters, the second level having as inputs the outputs of the first level
19 synthesis filter banks.

20 117. The Infringing Instrumentalities infringe claim 57 of the RE281C patent. (*See, e.g.*,
21 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC
22 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

23

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1 118. The Infringing Instrumentalities infringe claim 58 of the RE281C patent. Claim 58
2 generally recites the system of claim 57, wherein at least one of the synthesis filter banks is
3 designed to generate polyphase components.

4 119. The Infringing Instrumentalities infringe claim 58 of the RE281C patent. (*See, e.g.*,
5 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, § 2.1 Definitions, p.9.)

6 120. The Infringing Instrumentalities infringe claim 59 of the RE281C patent. Claim 59
7 generally recites the system of claim 58, wherein the polyphase components are generated using a
8 window length of 512 samples.

9 121. The Infringing Instrumentalities infringe claim 59 of the RE281C patent. (*See, e.g.*,
10 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Figure A.2, p.39.)

11 122. The Infringing Instrumentalities infringe claim 60 of the RE281C patent. Claim 60
12 generally recites the system of claim 57, wherein at least one of the synthesis filter banks is
13 designed to transform frequency components into polyphase components by cosine modulating the
14 frequency components.

15 123. The Infringing Instrumentalities infringe claim 60 of the RE281C patent. (*See, e.g.*,
16 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
17 p.41.)

18 124. The Infringing Instrumentalities infringe claim 63 of the RE281C patent. Claim 63
19 generally recites the system of claim 57, wherein the tree-structured array is designed to synthesize
20 a decompressed audio signal.

21 125. The Infringing Instrumentalities infringe claim 63 of the RE281C patent. (*See, e.g.*,
22 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

1 126. The Infringing Instrumentalities infringe claims 65 of the RE281C patent. Claim 65
2 generally recites the system of claim 57, wherein at least one of the synthesis filter banks transforms
3 sub-band components into polyphase components by cosine modulating the sub-band components.

4 127. The Infringing Instrumentalities infringe claim 65 of the RE281C patent. (*See, e.g.*,
5 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
6 p.41.)

7 128. The Infringing Instrumentalities infringe claim 66 of the RE281C patent. Claim 66
8 generally recites a signal processing system that includes means for splitting a signal into subbands
9 using multiple filter banks that can connect to form a tree-structured array having a root node and
10 greater than two leaf nodes. Each node includes one filter bank having greater than two filters, and
11 at least one of the leaf nodes has a different number of filters than a second of the leaf nodes.

12 129. The Infringing Instrumentalities infringe claim 66 of the RE281C patent. (*See, e.g.*,
13 ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 11172-3, § 2.1 Definitions, p.5; ISO/IEC 14496-
14 3:2009(E), § 4.6.18.4 SBR filterbanks, p.238.)

15 130. The Infringing Instrumentalities infringe claim 67 of the RE281C patent. Claim 67
16 generally recites the system of claim 66 wherein at least one of the filter banks is designed to utilize
17 cosine modulation.

18 131. The Infringing Instrumentalities infringe claim 67 of the RE281C patent. (*See, e.g.*,
19 ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, §
20 C.1.3 Analysis subband filter, p.67.)

21 132. The Infringing Instrumentalities infringe claim 68 of the RE281C patent. Claim 68
22 generally recites the system of claim 66, wherein the signal is an audio signal.

23 133. The Infringing Instrumentalities infringe claim 68 of the RE281C patent. (*See, e.g.*,
24 ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66.)

1 134. The Infringing Instrumentalities infringe claim 69 of the RE281C patent. Claim 69
2 generally recites the system of claim 66, wherein at least one of the filter banks is designed to
3 generate polyphase components.

4 135. The Infringing Instrumentalities infringe claim 69 of the RE281C patent. (*See, e.g.*,
5 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
6 p.240.)

7 136. The Infringing Instrumentalities infringe claim 70 of the RE281C patent. Claim 70
8 generally recites the system of claim 69, wherein the polyphase components are generated using a
9 window comprising 512 samples.

10 137. The Infringing Instrumentalities infringe claim 70 of the RE281C patent. (*See, e.g.*,
11 ISO/IEC 11172-3, Table C.1, p.68-69.)

12 138. The Infringing Instrumentalities infringe claim 71 of the RE281C patent. Claim 71
13 generally recites a signal processing system that includes means for splitting a signal into sub-bands
14 using multiple filter banks that can connect to form a tree-structured array having first and second
15 levels. The first level of the array includes one filter bank having more than two filters. The second
16 level of the array includes at least two second level filter banks. Each second level filter bank has as
17 its input an output from a different filter in the first level, and one second level filter bank has a
18 different number of filters than another second level filter bank.

19 139. The Infringing Instrumentalities infringe claim 71 of the RE281C patent. (*See, e.g.*,
20 ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid
21 filterbank, p.96; ISO/IEC 14496-3:2009(E), Introduction; ISO/IEC 14496-3:2009(E), § 4.6.18.4
22 SBR filterbanks, p.238.)

1 140. The Infringing Instrumentalities infringe claim 72 of the RE281C patent. Claim 72
2 generally recites the system of claim 71, wherein at least one of the filter banks is designed to utilize
3 cosine modulation.

4 141. The Infringing Instrumentalities infringe claim 72 of the RE281C patent. (*See*,
5 *e.g.*, ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, §
6 C.1.3 Analysis subband filter, p.67; ISO/IEC 14496-3:2009(E), § 8.A.3 Decoding process, p.65-
7 66; ISO/IEC 14496-3:2009(E), § 8.6.4.3 Low frequency filtering, p.47.)

8 142. The Infringing Instrumentalities infringe claim 73 of the RE281C patent. Claim 73
9 generally recites the system of claim 71, wherein the signal is an audio signal.

10 143. The Infringing Instrumentalities infringe claim 73 of the RE281C patent. (*See*,
11 *e.g.*, ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 11172-3, § C.1.1.1 Introduction,
12 p.66; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E),
13 § 8.A.1 Overview, p.65.)

14 144. The Infringing Instrumentalities infringe claim 74 of the RE281C patent. Claim 74
15 generally recites the system of claim 71, wherein at least one of the filter banks is designed to
16 generate polyphase components.

17 145. The Infringing Instrumentalities infringe claim 74 of the RE281C patent. (*See e.g.*,
18 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
19 p.240.)

20 146. The Infringing Instrumentalities infringe claim 75 of the RE281C patent. Claim 75
21 generally recites the system of claim 74, wherein the polyphase components are generated using a
22 window comprising 512 samples.

23 147. The Infringing Instrumentalities infringe claim 75 of the RE281C patent. (*See, e.g.*,
24 ISO/IEC 11172-3, Table C.1, p.68-69; ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67.)

1 148. The Infringing Instrumentalities infringe claim 76 of the RE281C patent. Claim 76
2 recites a signal processing system comprising means for synthesizing a signal using a plurality of
3 synthesis filter banks that can connect to form a tree-structured array having greater than two leaf
4 nodes and a root node, wherein each of the nodes comprises one synthesis filter bank having greater
5 than two filters, with at least one of the leaf nodes having a number of filters that differs from the
6 number of filters in a second leaf node.

7 149. The Infringing Instrumentalities infringe claim 76 of the RE281C patent. (*See, e.g.,*
8 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC
9 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the
10 hybrid filterbank, p.95; ISO/IEC 11172-3, § 2.4.3.4.10.2 IMDCT, p.36.)

11 150. The Infringing Instrumentalities infringe claim 77 of the RE281C patent. Claim 77
12 generally recites the system of claim 76, wherein at least one of the synthesis filter banks is
13 designed to utilize polyphase components.

14 151. The Infringing Instrumentalities infringe claim 77 of the RE281C patent. (*See, e.g.,*
15 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, § 2.1 Definitions, p.9.)

16 152. The Infringing Instrumentalities infringe claim 78 of the RE281C patent. Claim 78
17 generally recites the system of claim 77, wherein the polyphase components are generated using a
18 window length of 512 samples.

19 153. The Infringing Instrumentalities infringe claim 78 of the RE281C patent. (*See, e.g.,*
20 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Table B.3, p.50-52.)

21 154. The Infringing Instrumentalities infringe claim 79 of the RE281C patent. Claim 79
22 generally recites the system of claim 76, wherein at least one of the synthesis filter banks is
23 designed to transform frequency components into polyphase components by cosine modulating the
24 frequency components.

1 155. The Infringing Instrumentalities infringe claim 79 of the RE281C patent. (*See, e.g.*,
2 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; *see also e.g.*, ISO/IEC 11172-3, Fig.
3 A.4 Annex A, p.41.)

4 156. The Infringing Instrumentalities infringe claim 80 of the RE281C patent. Claim 80
5 generally recites the system of claim 76, wherein the signal is a reconstructed audio signal.

6 157. The Infringing Instrumentalities infringe claim 80 of the RE281C patent. (*See, e.g.*,
7 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

8 158. The Infringing Instrumentalities infringe claim 81 of the RE281C patent. Claim 81
9 generally recites the system of claim 76, wherein the tree-structured array is designed to synthesize
10 a decompressed audio signal.

11 159. The Infringing Instrumentalities infringe claim 81 of the RE281C patent. (*See, e.g.*,
12 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

13 160. The Infringing Instrumentalities infringe claim 82 of the RE281C patent. Claim 82
14 generally recites the system of claim 76, wherein at least one of the synthesis filter banks is
15 designed to transform sub-band components into polyphase components by cosine modulating the
16 sub-band components.

17 161. The Infringing Instrumentalities infringe claim 82 of the RE281C patent. (*See, e.g.*,
18 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
19 p.41.)

20 162. The Infringing Instrumentalities infringe claim 83 of the RE281C patent. Claim 83
21 generally recites a signal processing system comprising means for synthesizing a signal using a
22 plurality of synthesis filter banks that can connect to form a tree-structured array having a first and a
23 second level, wherein the first level comprises more than two first level synthesis filter banks, and
24 one first level synthesis filter bank has a different number of filters than another first level synthesis

1 filter bank, and the second level comprises one synthesis filter bank having more than two filters,
2 the second level having as inputs the outputs of the first level synthesis filter banks.

3 163. The Infringing Instrumentalities infringe claim 83 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank,
5 p.36; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41; *see also e.g.* ISO/IEC 11172-3, § 2.4.3.4.10.2
6 IMDCT, p.36; ISO/IEC 11172-3, § 2.4.2.7 Audio data, Layer III, p.27.)

7 164. The Infringing Instrumentalities infringe claim 84 of the RE281C patent. Claim 84
8 generally recites the system of claim 83, wherein at least one of the synthesis filter banks is
9 designed to utilize polyphase components.

10 165. The Infringing Instrumentalities infringe claim 84 of the RE281C patent. (*See, e.g.*,
11 ISO/IEC 11172-3, § 2.1 Definitions, p.9; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

12 166. The Infringing Instrumentalities infringe claim 85 of the RE281C patent. Claim 85
13 generally recites the system of claim 84, wherein the polyphase components are generated using a
14 window length of 512 samples.

15 167. The Infringing Instrumentalities infringe claim 85 of the RE281C patent. (*See*,
16 *e.g.*, ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Figure A.2,
17 p.39)

18 168. The Infringing Instrumentalities infringe claim 86 of the RE281C patent. Claim 86
19 of the RE281C patent generally recites the system of claim 83, wherein at least one of the synthesis
20 filter banks is designed to transform frequency components into polyphase components by cosine
21 modulating the frequency components.

22 169. The Infringing Instrumentalities infringe claim 86 of the RE281C patent. (*See, e.g.*,
23 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
24 p.41; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

1 170. The Infringing Instrumentalities infringe claim 87 of the RE281C patent. Claim 87
2 generally recites the system of claim 83 wherein the signal is a reconstructed audio signal.

3 171. The Infringing Instrumentalities infringe claim 87 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

5 172. The Infringing Instrumentalities infringe claim 88 of the RE281C patent. Claim 88
6 generally recites the system of claim 83, wherein the tree-structured array is designed to synthesize
7 a decompressed audio signal.

8 173. The Infringing Instrumentalities infringe claim 88 of the RE281C patent. (*See, e.g.*,
9 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

10 174. The Infringing Instrumentalities infringe claim 89 of the RE281C patent. Claim 89
11 generally recites the system of claim 83, wherein at least one of the synthesis filter banks is
12 designed to transform sub-band components into polyphase components by cosine modulating the
13 sub-band components.

14 175. The Infringing Instrumentalities infringe claim 89 of the RE281C patent. (*See, e.g.*,
15 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
16 p.41.)

17 176. The Infringing Instrumentalities infringe claim 90 of the RE281C patent. Claim 90
18 generally recites an information storage media storing information that when executed splits a signal
19 into subbands using multiple filter banks connected to form a tree-structured array having a root
20 node and greater than two leaf nodes. Each node includes one filter bank having greater than two
21 filters, and at least one of the leaf nodes has a different number of filters than a second of the leaf
22 nodes.

1 177. The Infringing Instrumentalities infringe claim 90 of the RE281C patent. (*See, e.g.*,
2 ISO/IEC 11172-3, § 2.1 Definitions, p.5; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
3 p.238; ISO/IEC 14496-3:2009(E), § 8.A.3 Decoding process, p.65-66.)

4 178. The Infringing Instrumentalities infringe claim 91 of the RE281C patent. Claim 91
5 generally recites the media of claim 90, wherein at least one of the filter banks is designed to utilize
6 cosine modulation.

7 179. The Infringing Instrumentalities infringe claim 91 of the RE281C patent. (*See, e.g.*,
8 ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.96; ISO/IEC 11172-3, §
9 C.1.3 Analysis subband filter, p.67.)

10 180. The Infringing Instrumentalities infringe claim 92 of the RE281C patent. Claim 92
11 generally recites the media of claim 90, wherein the signal is an audio signal.

12 181. The Infringing Instrumentalities infringe claim 92 of the RE281C patent. (*See, e.g.*,
13 ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview,
14 p.246.)

15 182. The Infringing Instrumentalities infringe claim 93 of the RE281C patent. Claim 93
16 generally recites the media of claim 90, wherein at least one of the filter banks is designed to utilize
17 polyphase components.

18 183. The Infringing Instrumentalities infringe claim 93 of the RE281C patent. (*See, e.g.*,
19 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
20 p.240; ISO/IEC 14496-3:2009(E), § 4.B.18.2 Analysis filterbank, p.106.)

21 184. The Infringing Instrumentalities infringe claim 94 of the RE281C patent. Claim 94
22 generally recites the media of claim 93, wherein the polyphase components are generated using a
23 window comprising 512 samples.

1 185. The Infringing Instrumentalities infringe claim 94 of the RE281C patent. (*See, e.g.,*
2 ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67.)

3 186. The Infringing Instrumentalities infringe claim 95 of the RE281C patent. Claim 95 of
4 the RE281C patent generally recites an information storage media storing information that when
5 executed splits a signal into sub-bands using multiple filter banks connected in a tree-structured
6 array having a first and a second level. The first level of the array includes one filter bank having
7 more than two filters. The second level of the array includes at least two filter banks. Each second
8 level filter bank has as its input an output from a different filter in the first level, and one second
9 level filter bank has a different number of filters than another second level filter bank.

10 187. The Infringing Instrumentalities infringe claim 95 of the RE281C patent. (*See, e.g.,*
11 ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC 11172-3, § C.1.1.2 The filterbank, p.67; ISO/IEC
12 14496-3:2009(E), § 4.6.18.4 SBR filterbanks, p.238; ISO/IEC 14496-3:2009(E), § 8.6.4 Parametric
13 stereo, p.42; ISO/IEC 14496-3:2009(E), § 8.A.3 Decoding process, p.65-66.)

14 188. The Infringing Instrumentalities infringe claim 96 of the RE281C patent. Claim 96 of
15 the RE281C patent generally recites the media of claim 95, wherein at least one of the filter banks is
16 designed to utilize cosine modulation.

17 189. The Infringing Instrumentalities infringe claim 96 of the RE281C patent. (*See, e.g.,*
18 ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67; ISO/IEC 11172-3, § C.1.3 Analysis
19 subband filter, p.67.)

20 190. The Infringing Instrumentalities infringe claim 97 of the RE281C patent. Claim 97
21 generally recites the media of claim 95, wherein the signal is an audio signal.

22 191. The Infringing Instrumentalities infringe claim 97 of the RE281C patent. (*See, e.g.,*
23 ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview,
24 p.246.)

1 192. The Infringing Instrumentalities infringe claim 98 of the RE281C patent. Claim 98
2 generally recites the media of claim 95, wherein at least one of the filter banks is designed to
3 generate polyphase components.

4 193. The Infringing Instrumentalities infringe claim 98 of the RE281C patent. (*See, e.g.*,
5 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks,
6 p.240.)

7 194. The Infringing Instrumentalities infringe claim 99 of the RE281C patent. Claim 99
8 generally recites the media of claim 98, wherein the polyphase components are generated using a
9 window comprising 512 samples.

10 195. The Infringing Instrumentalities infringe claim 99 of the RE281C patent. (*See, e.g.*,
11 ISO/IEC 11172-3, Table C.1, p.68-69.)

12 196. The Infringing Instrumentalities infringe claim 100 of the RE281C patent. Claim 100
13 recites an information storage media having stored thereon information that when executed
14 synthesizes a signal using a plurality of synthesis filter banks connected to form a tree structured
15 array having greater than two leaf nodes and a root node, wherein each of the nodes comprises one
16 synthesis filter bank having greater than two filters, with at least one of the leaf nodes having a
17 number of filters that differs from the number of filters in a second leaf node.

18 197. The Infringing Instrumentalities infringe claim 100 of the RE281C patent. (*See, e.g.*
19 ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank,
20 p.36; ISO/IEC 11172-3, § 2.4.3.4 Layer III, p.33; ISO/IEC 11172-3, Fig. A.4 Annex A,
21 p.41; ISO/IEC 11172-3, § 2.4.2.7 Audio data, Layer III, p.27.)

22 198. The Infringing Instrumentalities infringe claim 101 of the RE281C patent. Claim 101
23 generally recites the media of claim 100, wherein at least one of the synthesis filter banks is
24 designed to utilize polyphase components.

1 199. The Infringing Instrumentalities infringe claim 101 of the RE281C patent. (*See,*
2 *e.g.*, ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

3 200. The Infringing Instrumentalities infringe claim 102 of the RE281C patent. Claim 102
4 generally recites the media of claim 101, wherein the polyphase components are generated using a
5 window length of 512 samples.

6 201. The Infringing Instrumentalities infringe claim 102 of the RE281C patent. (*See,*
7 *e.g.*, ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Table B.3,
8 p.50-52.)

9 202. The Infringing Instrumentalities infringe claim 103 of the RE281C patent. Claim 103
10 generally recites the media of claim 100, wherein at least one of the synthesis filter banks is
11 designed to transform frequency components into polyphase components by cosine modulating the
12 frequency components.

13 203. The Infringing Instrumentalities infringe claim 103 of the RE281C patent. (*See, e.g.*,
14 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
15 p.41.)

16 204. The Infringing Instrumentalities infringe claim 104 of the RE281C patent. Claim 104
17 generally recites the media of claim 100, wherein wherein the signal is a reconstructed audio signal.

18 205. The Infringing Instrumentalities infringe claim 104 of the RE281C patent. (*See, e.g.*,
19 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

20 206. The Infringing Instrumentalities infringe claim 105 of the RE281C patent. Claim 105
21 generally recites the media of claim 100, wherein the tree-structured array is designed to synthesize
22 a decompressed audio signal.

23 207. The Infringing Instrumentalities infringe claim 105 of the RE281C patent. (*See, e.g.*,
24 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

1 208. The Infringing Instrumentalities infringe claim 106 of the RE281C patent. Claim 106
2 generally recites the media of claim 100, wherein at least one of the synthesis filter banks is designed
3 to transform sub-band components into polyphase components by cosine modulating the sub-band
4 components.

5 209. The Infringing Instrumentalities infringe claim 106 of the RE281C patent. (*See, e.g.,*
6 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
7 p.41.)

8 210. The Infringing Instrumentalities infringe claim 107 of the RE281C patent. Claim 107
9 generally recites an information storage media having stored thereon information that when
10 executed synthesizes a signal using a plurality of synthesis filter banks connected in a tree-
11 structured array having a first and a second level.

12 211. The Infringing Instrumentalities infringe claim 107 of the RE281C patent. (*See, e.g.,*
13 ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank,
14 p.36; ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.95.)

15 212. The Infringing Instrumentalities infringe claim 108 of the RE281C patent. Claim 108
16 generally recites the media of claim 107, wherein at least one of the synthesis filter banks is
17 designed to generate polyphase components.

18 213. The Infringing Instrumentalities infringe claim 108 of the RE281C patent. (*See, e.g.,*
19 ISO/IEC 11172-3, § 2.1 Definitions, p.8; ISO/IEC 11172-3, § 2.1 Definitions, p.9; ISO/IEC 11172-
20 3, Fig. A.4 Annex A, p.41.)

21 214. The Infringing Instrumentalities infringe claim 109 of the RE281C patent. Claim
22 109 generally recites the media of claim 108, wherein the polyphase components are generated
23 using a window comprising 512 samples.

1 215. The Infringing Instrumentalities infringe claim 109 of the RE281C patent. (*See, e.g.*,
2 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Figure A.2, p.39.)

3 216. The Infringing Instrumentalities infringe claim 110 of the RE281C patent. Claim 10
4 recites the media of claim 107, wherein at least one of the synthesis filter banks is designed to
5 transform frequency components into polyphase components by cosine modulating the frequency
6 components.

7 217. The Infringing Instrumentalities infringe claim 110 of the RE281C patent. (*See, e.g.*,
8 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,
9 p.41.)

10 218. The Infringing Instrumentalities infringe claim 111 of the RE281C patent. Claim 11
11 generally recites the media of claim 111, wherein the signal is a decompressed audio signal.

12 219. The Infringing Instrumentalities infringe claim 111 of the RE281C patent. (*See, e.g.*,
13 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

14 220. The Infringing Instrumentalities infringe claim 112 of the RE281C patent. Claim 112
15 generally recites the media of claim 107, wherein the tree-structured array is designed to synthesize
16 a decompressed audio signal.

17 221. The Infringing Instrumentalities infringe claim 112 of the RE281C patent. (*See, e.g.*,
18 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

19 222. The Infringing Instrumentalities infringe claim 113 of the RE281C patent. Claim 113
20 generally recites the media of claim 107, wherein at least one of the synthesis filter banks is
21 designed to transform sub-band components into polyphase components by cosine modulating the
22 sub-band components.

23 223. The Infringing Instrumentalities infringe claim 113 of the RE281C patent. (*See, e.g.*,
24 ISO/IEC 11172-3, § 2.4.3.3.5 Synthesis subband filter, p.32; ISO/IEC 11172-3, Fig. A.4 Annex A,

1 p.41; ISO/IEC 11172-3, § 2.1 Definitions, p.5; ISO/IEC 11172-3, § 2.4.3.4 Layer III, p.33; ISO/IEC
2 11172-3, § 2.4.2.7 Audio data, Layer III, p.26; ISO/IEC 14496-3:2009(E), § 8.C.6.2 Parameter
3 Estimation, p.106; ISO/IEC 14496-3:2009(E), § 8.6.4.3 Low frequency filtering, p.44.)

4 224. The Infringing Instrumentalities infringe claim 114 of the RE281C patent. Claim 114
5 generally recites an information storage media storing audio information having been split into
6 subbands using multiple filter banks connected to form a tree-structured array having a root node
7 and greater than two leaf nodes. Each node includes at least one filter bank having greater than two
8 filters, and at least one of the leaf nodes has a different number of filters than a second one of the
9 leaf nodes.

10 225. The Infringing Instrumentalities infringe claim 114 of the RE281C patent. (*See, e.g.,*
11 ISO/IEC 11172-3, § 0.2 Layers, p.vi.; ISO/IEC 11172-3, § 2.1 Definitions, p.5; ISO/IEC 14496-
12 3:2009(E), § 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E), § 8.6.4 Parametric
13 stereo, p.42; ISO/IEC 14496-3:2009(E), § 8.6.4.3 Low frequency filtering, p.44.)

14 226. The Infringing Instrumentalities infringe claim 115 of the RE281C patent. Claim 115
15 generally recites the media of claim 114, wherein the information is audio information.

16 227. The Infringing Instrumentalities infringe claim 115 of the RE281C patent. (*See, e.g.,*
17 ISO/IEC 11172-3, § 0.1 Encoding, p.v; ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview,
18 p.246; ISO/IEC 14496-3:2009(E), § 8.A.1 Overview, p.65.)

19 228. The Infringing Instrumentalities infringe claim 116 of the RE281C patent. Claim 116
20 generally recites an information storage media storing audio information having been split into sub-
21 bands using multiple filter bands connected in a tree-structured array having first and second levels.
22 The first level of the array includes one filter bank having more than two filters. The second level of
23 the array includes at least two filter banks. Each second level filter bank has as its input an output
24

1 from a different filter in the first level, and one second level filter bank has a different number of
2 filters than another second level filter bank.

3 229. The Infringing Instrumentalities infringe claim 116 of the RE281C patent. (*See, e.g.*,
4 ISO/IEC 11172-3, § 0.2 Layers, p.vi; ISO/IEC 11172-3, § C.1.3 Analysis subband filter, p.67;
5 ISO/IEC 14496-3:2009(E), § 4.6.18.4 SBR filterbanks, p.238; ISO/IEC 14496-3:2009(E), § 8.A.3
6 Decoding process, p.65-66.)

7 230. The Infringing Instrumentalities infringe claim 117 of the RE281C patent. Claim 117
8 generally recites the media of claim 116, wherein the information is audio information.

9 231. The Infringing Instrumentalities infringe claim 117 of the RE281C patent. (*See*,
10 *e.g.*, ISO/IEC 11172-3, § 0.1 Encoding, p.v.; ISO/IEC 11172-3, § C.1.1.1 Introduction, p.66;
11 ISO/IEC 14496-3:2009(E), § 4.6.18.5 SBR tool overview, p.246; ISO/IEC 14496-3:2009(E), §
12 8.A.1 Overview, p.65.)

13 232. The Infringing Instrumentalities infringe claim 118 of the RE281C patent. Claim 118
14 generally recites a method of regenerating a signal using a plurality of synthesis filter banks
15 connected to form a tree-structured array having greater than two leaf nodes and a root node,
16 wherein each of the nodes comprises one synthesis filter bank having greater than two filters, with
17 at least one of the leaf nodes having a number of filters that differs from the number of filters in a
18 second lead node.

19 233. The Infringing Instrumentalities infringe claim 118 of the RE281C patent. (*See, e.g.*,
20 ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36; ISO/IEC 11172-3, § 2.4.3.4 Layer III,
21 p.33; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41; ISO/IEC 11172-3, § 2.4.3.4.10.3 Windowing,
22 p.37.)

23 234. The Infringing Instrumentalities infringe claim 119 of the RE281C patent. Claim 119
24 generally recites the media of claim 118, wherein the regenerated signal is an audio signal.

1 235. The Infringing Instrumentalities infringe claim 119 of the RE281C patent. (*See, e.g.*,
2 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi.)

3 236. The Infringing Instrumentalities infringe claim 120 of the RE281C patent. Claim 120
4 generally recites a method of reconstructing a signal using a plurality of synthesis filter banks
5 connected in a tree-structured array having a first and a second level, wherein the first level
6 comprises more than two first level synthesis filter banks, and one first level synthesis filter bank
7 has a different number of filters than another first level synthesis filter bank, and the second level
8 comprises one synthesis filter bank having more than two filters, the second level having as inputs
9 the outputs of the first level synthesis filter banks.

10 237. The Infringing Instrumentalities infringe claim 120 of the RE281C patent. (*See, e.g.*,
11 ISO/IEC 11172-3, § 2.1 Definitions, p.9; ISO/IEC 11172-3, § 2.4.3.4.10 Synthesis filterbank, p.36;
12 ISO/IEC 11172-3, § C.1.5.3.3 Analysis part of the hybrid filterbank, p.95; ISO/IEC 11172-3, §
13 2.4.3.4.10.2 IMDCT, p.36.)

14 238. The Infringing Instrumentalities infringe claim 121 of the RE281C patent. Claim 121
15 generally recites the media of claim 120, wherein the regenerated signal is an audio signal.

16 239. The Infringing Instrumentalities infringe claim 121 of the RE281C patent. (*See, e.g.*,
17 ISO/IEC 11172-3, Fig. 2 §0.4 Decoding, p.vi; ISO/IEC 11172-3, Fig. A.4 Annex A, p.41.)

18 240. On information and belief, the Infringing Instrumentalities are marketed, provided to,
19 and/or used by or for each Defendant's partners, clients, customers and end users across the country
20 and in this District.

21 241. Upon information and belief, since at least the date of Hybrid Audio-Texas' notice
22 letter, each Defendant has induced and continues to induce others to infringe at least one claim of
23 the RE281C patent under 35 U.S.C. § 271(b) by, among other things, and with specific intent or
24 willful blindness, actively aiding and abetting others to infringe, including but not limited to each

1 Defendant's partners, clients, customers, and end users, whose use of the Infringing
2 Instrumentalities constitutes direct infringement of at least one claim of the RE281C patent.

3 242. In particular, each Defendant's actions that aid and abet others such as its partners,
4 customers, clients, and end users to infringe include advertising and distributing the Infringing
5 Instrumentalities and providing instruction materials, training, and services regarding the Infringing
6 Instrumentalities. On information and belief, each Defendant has engaged in such actions with
7 specific intent to cause infringement or with willful blindness to the resulting infringement because
8 each Defendant has had actual knowledge of the RE281C patent and knowledge that its acts were
9 inducing infringement of the RE281C patent since at least the date each Defendant received notice
10 that such activities infringed the RE281C patent.

11 243. Upon information and belief, each Defendant is liable as a contributory infringer of
12 the RE281C patent under 35 U.S.C. § 271(c) by offering to sell, selling and importing into the
13 United States wireless communications devices to be especially made or adapted for use in an
14 infringement of the RE281C patent. The Infringing Instrumentalities are a material component for
15 use in practicing the RE281C patent and are specifically made and are not a staple article of
16 commerce suitable for substantial non-infringing use.

17 244. Upon information and belief, since at least the time each Defendant received notice,
18 Defendants' infringement has been willful.

19 245. Hybrid Audio has been harmed by each Defendant's infringing activities.

20 **JURY DEMAND**

21 Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Hybrid Audio demands a trial
22 by jury on all issues triable as such.

23 **PRAYER FOR RELIEF**

WHEREFORE, if Plaintiff Hybrid Audio is unsuccessful securing a reasonable and non-discriminatory royalty prior to service of this Complaint, Plaintiff Hybrid Audio demands judgment for itself and against each Defendant as follows:

- A. An adjudication that each Defendant has infringed the RE281C patent;
- B. An award of damages to be paid by each Defendant adequate to compensate Hybrid Audio for each Defendant's past infringement of said patents, and any continuing or future infringement through the date such judgment is entered, including interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;
- C. A declaration that this case is exceptional under 35 U.S.C. § 285, and an award of Plaintiff's reasonable attorneys' fees; and
- D. An award to Hybrid Audio of such further relief at law or in equity as the Court deems just and proper.

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